REMARKS

Reconsideration and allowance are respectfully requested in view of the following remarks.

By this amendment, various claims are amended. No new matter has been added. Accordingly, Claims 1-7, 9-11, 13-23, 25-28, 30-33, 35-38 and 48-58 are pending in the present application.

Claim Objection

Claims 13-16 and 57 are objected to on the basis of informalities.

To address the Examiner's concerns, claims 13-16 and 57 have been amended, for clarification.

In view of the foregoing, withdrawal of the objection of claims 13-16 and 57 is respectfully requested.

Claim Rejection Under 35 U.S.C. § 101

Claim 11 is rejected under 35 U.S.C. §101 for allegedly being directed to non-statutory subject matter. Claims 13-15, 50 and 51 are rejected under 35 U.S.C. §101 for allegedly incorporating the deficiencies of independent claim 11.

Claim 17 is rejected under 35 U.S.C. §101 for allegedly being directed to non-statutory subject matter. Claims 18-23, 25-27, 52 and 53 are rejected under 35 U.S.C. §101 for allegedly incorporating the deficiencies of independent claim 17.

Specifically, the Examiner asserts that claims 11 and 17 are directed towards computer readable medium, which, if interpreted broadly, includes non-statutory subject matter.

To address the Examiner's concerns, claims 11, 17-23, 25-27, 52 and 53 have been amended, for clarification to be directed to a non-transitory computer readable medium.

In view of the foregoing, withdrawal of the rejection of claims 11, 13-15, 17-23, 25-27 and 50-53 under 35 U.S.C. §101 is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-7, 9-11, 13-23, 25-28, 30-33, 35-38, 48, 52, 54, 56 and 58 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bellegarda et al. (article entitled "Exploiting Latent Semantic Information in Statistical Language Modelling," hereinafter "Bellegarda") in view of Vivisimo (article entitled "Vivisimo FAQ, hereinafter "Vivisimo") and further in view of Moore et al. (U.S. Patent Application Publication No. 2004/0193621, hereinafter "Moore"). This rejection is traversed as follows.

For clarification, claim 1 is amended to recite a method of displaying files within a file system to a user in a semantic hierarchy, the method comprising the steps of:

mapping the files in the file system into a semantic vector space;

clustering the files within said space, wherein multiple threshold values that are settable to desired levels of granularity are defined, and said files are clustered based on said multiple threshold values;

deriving a hierarchy of plural levels of clusters from said clustering; and

providing a user an option to selectively switch between displaying the files in a hierarchical format of plural levels of clusters based on said derived hierarchy, and displaying the files in a hierarchical format based on locations of the files in the file system.

The various files and folders present on a computer system are organized in a complex hierarchy of directories, referred to as the file system. Most users start out with a reasonably principled directory structure, but as time goes by and the complexity of their file hierarchy grows, it typically becomes more and more difficult for them to navigate this ever-expanding portion of the file system. According to known methods, to make a semantic view possible, it is necessary to classify each user-generated file against a suitable taxonomy, so that files sharing the same taxonomy node can be grouped together accordingly.

However, it is desirable to be able to automatically generate a special purpose taxonomy, revolving around concepts that are semantically meaningful and important to the user.

Applicants' exemplary embodiments provide a method and apparatus for automatically clustering files and suitably displaying the resulting clusters. According to Applicants' exemplary embodiments, a semantic view option is incorporated within a graphical user interface. When invoked, this view employs a clustering and labeling algorithm that results in the creation of semantic hierarchy of all user-generated documents based on document content.

The semantic view according to Applicants' exemplary embodiments can be incorporated into the graphical user interface as one of a number of selectable options from which the user can choose. Thus, a view might be the hierarchical tree view, as shown in Fig. 2A of the present application, in which the files are organized in accordance with their path names, i.e. the actual file system structure. To facilitate access to a particular file whose location may not be intuitive, the user can switch to

the semantic view, as shown in Fig. 2B of the present application, and thereby select a file on the basis of its content, rather than its location.

As explained below, none of the references enables the user to selectively switch between a hierarchical view that is automatically derived from a corpus of documents by mapping the files in the file system into a semantic vector space, and clustering the files, and another hierarchical view of the same corpus that is based upon a pre-defined view, such as a hierarchical view based on physical locations of the files. Bellegarda, Vivisimo and Moore, whether considered individually or in combination, do not disclose a combination including "providing a user an option to selectively switch between displaying the files in a hierarchical format of plural levels of clusters based on said derived hierarchy, and displaying the files in a hierarchical format based on locations of the files in the file system," as recited in claim 1.

Bellegarda discloses the use of latent semantic analysis to uncover the salient semantic relationships between words and documents in a corpus. See the abstract. Discrete words and documents are mapped onto a semantic vector space, in which clustering techniques can be used. *Id.* As such, Bellegarda provides a framework for automatic semantic classification of a large number of documents. *Id.* An example of the corpus is the Wall Street Journal domain. *Id.*

Vivisimo discloses organizing clustered documents in a hierarchy.

Bellegarda and Vivisimo, even if combined, at most disclose clustering documents and organizing the clustered documents in a hierarchy.

Bellegarda and Vivisimo, however, do not disclose enabling a user to selectively switch between a hierarchical view that is automatically derived from a corpus of documents by mapping the files in the file system into a semantic vector

space, and clustering the files, and another hierarchical view of the same corpus that is based upon a pre-defined view, such as a hierarchical view based on physical locations of the files.

In fact, the Office Action acknowledges that Bellegarda and Vivisimo do not disclose providing a user an option of displaying the files in a hierarchical format based on locations of the files in the file system.

It is asserted in the Office Action that Moore remedies the deficiencies of the Bellegarda and Vivisimo references by disclosing "providing a user an option of displaying the files in a hierarchical format based on the locations of the files in the file system."

Moore discloses a file organization method using virtual folders which expose regular files and folders to users in different views based on their metadata instead of the actual physical underlying file system structure on the disk. See Moore: the abstract and paragraph 0064. In Moore, the metadata include the virtual folder descriptions stored in the virtual folder descriptions database 232, as shown in Fig. 2 of the reference.

Fig. 6 of Moore is a tree diagram of a virtual folder structure. As shown in Fig. 6, at a first level, the virtual folder 500 contains virtual folders 510, 520, and 530, corresponding to clients, contracts, and year, respectively.

Fig. 7 of Moore is a tree diagram of the virtual folder structure of Fig. 6, wherein at a second level, the virtual folder 510 further includes virtual folders 511 and 512, which correspond to contracts and year, respectively.

Fig. 8 of Moore is a tree diagram of the virtual folder structure of Fig. 7, wherein at a third level, the virtual folder 511 contains a virtual folder 513, which

corresponds to a year. In other words, the contracts stack of virtual folder 511 is further filtered by year.

Moore discloses a virtual folder view as an alternative view of folders based on their physical locations. The virtual folder view requires virtual folder descriptions that are manually assigned indexes. As such, both views in Moore are pre-defined, either based on physical locations of the files, or the descriptions of the files stored in a database.

Moore at most can be considered as providing a pre-defined view based on physical locations of the files, and another pre-defined view based on the virtual folder descriptions, i.e., the virtual folder view. Moore, however, does not disclose enabling a user to selectively switch between a hierarchical view that is automatically derived from a corpus of documents by mapping the files in the file system into a semantic vector space, and clustering the files, and another hierarchical view of the same corpus that is based upon a pre-defined view, such as a hierarchical view based on physical locations of the files. Therefore, Moore does not remedy the deficiencies of the Bellegarda and Vivisimo references.

Furthermore, Moore is not combinable with the Bellegarda and Vivisimo references.

The Bellegarda and Vivisimo references focus on solutions of automatic semantic classification of documents, to avoid the cost of using manually assigned indexes. Bellegarda and Vivisimo focus on organizing a large amount of loose information, such as files from the Internet or a virtual domain. Therefore, providing an alternative view for the files that are semantically mapped, as disclosed in Bellegarda and Vivisimo, based on the physical locations of the files, as disclosed in

Moore, would present to users a meaningless exhaustive list of the large number of files being mapped in the semantic vector space. If an Internet search is finding needles in a haystack, the above-mentioned alternative view list based on physical locations of large amount of loose files is no more useful than an exhaustive list of files in the Internet. At least for these reasons, Bellegarda, Vivisimo and Moore are not combinable.

In view of the foregoing, Applicants' claims 1, 11, 17, 28 and 38 are allowable. Claims 2-7, 9, 10, 13-16, 18-23, 25-28, 30-33, 35-37, 48, 52, 54, 56 and 58 are patentable at least because of their respective dependencies.

Claims 49, 51, 53, 55 and 57 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bellagards in view of Vivisimo and further in view of Moore, and further in view of Hertz. (U.S. Patent Application Publication No. 2003/0037041, hereinafter "Hertz").

Hertz is not purported in the Office Action to remedy the above deficiencies of the Bellegarda, Vivisimo and Moore references. Therefore, the remaining pending claims are patentable at least because of their respective dependencies.

CONCLUSION

From the foregoing, further and favorable action in the form of a Notice of Allowance is respectfully requested and such action is earnestly solicited.

In the event that there are any questions concerning this amendment, or the application in general, the Examiner is respectfully requested to telephone the undersigned so that prosecution of present application may be expedited.

Respectfully submitted,

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